نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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$$(\sin 120^\circ + \sin 30^\circ)(\cos 210^\circ - \cos 150^\circ)$$

$$\left(\frac{\sqrt{3}}{2} + \left(-\frac{1}{2}\right)\right)\left(\frac{\sqrt{3}}{2} + \frac{\sqrt{2}}{2}\right) \quad \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{\sqrt{2}}{2}\right)^2 = \frac{3}{4} - \frac{2}{4} = \frac{1}{4}$$

$$\frac{1+3\tan^2 210^\circ}{4\cos^2 60^\circ + 2\cos^2 120^\circ} = \frac{1+3\left(\frac{\sqrt{3}}{3}\right)^2}{4\left(\frac{1}{2}\right)^2 + 2\left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1+1}{3+1} = \frac{2}{4} = \frac{1}{2}$$

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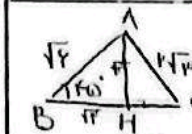
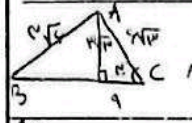


$$\sin 60^\circ = \frac{x}{\sqrt{6}} = \frac{\sqrt{2}}{2} \qquad \frac{\sqrt{12}}{2} = \frac{4\sqrt{3}}{x}$$

$$\sin C = \frac{\sqrt{3}}{2\sqrt{3}} = \frac{1}{2} \qquad \cos C = \frac{\sqrt{3}}{2} \qquad \frac{\sqrt{3}}{2} = \frac{HC}{2\sqrt{3}} \qquad \boxed{HC = 3}$$



$$\cos 60^\circ = \frac{\sqrt{2}}{4} = \frac{6}{12} \qquad \sin\hat{B} = \frac{3\sqrt{3}}{4\sqrt{6}} = \frac{\sqrt{3}}{\sqrt{2}\times\sqrt{3}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

$\sin\hat{B}$ برابر $\sin 45^\circ$ است

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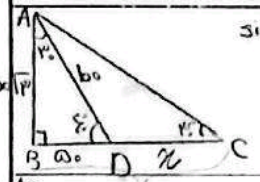
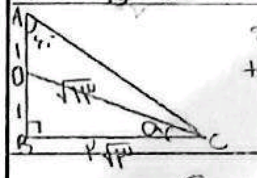


$$\sin 30^\circ = \frac{\sqrt{3}}{2} = \frac{60\sqrt{3}}{x} \qquad \frac{60\sqrt{3}\times 2}{\sqrt{3}} = 120$$

$$\tan 30^\circ = \frac{60\sqrt{3}}{x+60} = \frac{\sqrt{3}}{3} \qquad \frac{60\sqrt{3}\times 3}{\sqrt{3}} = x + 60 \qquad \boxed{x = 100}$$



$$\sin\alpha = ? \qquad 1+\cot^2\alpha = \frac{1}{\sin^2\alpha}$$

$$\tan 60^\circ = \sqrt{3} = \frac{BC}{2} \qquad BC = 2\sqrt{3} \qquad \cot\alpha = 2\sqrt{2} \qquad 1+12 = \frac{1}{\sin^2\alpha} \qquad 13 = \frac{1}{\sin^2\alpha}$$

$$\sin^2\alpha = \frac{1}{13} \qquad \boxed{\sin\alpha = \frac{1}{\sqrt{13}}}$$

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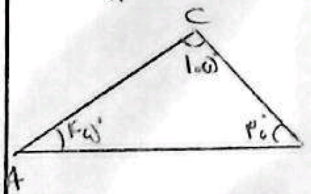

$$\frac{AB}{\sin 105^\circ} = \frac{AC}{\sin 30^\circ} \qquad \frac{1}{2}AB = AC\left(\frac{\sqrt{2+\sqrt{2}}}{2}\right) \Rightarrow \frac{AB}{AC} = \frac{\frac{\sqrt{2+\sqrt{2}}}{2}}{\frac{1}{2}} = \sqrt{2+\sqrt{2}}$$

$$45^\circ + 60^\circ = 105^\circ \qquad \sin 105^\circ = \sin 60^\circ\cos 45^\circ + \sin 45^\circ\cos 60^\circ$$

$$\sin(60^\circ+45^\circ) \quad \frac{\sqrt{3}}{2}\cdot\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\cdot\frac{1}{2} = \frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{4} = \frac{\sqrt{6}+\sqrt{2}}{4} = \frac{\sqrt{2}\sqrt{3+1}}{2}$$

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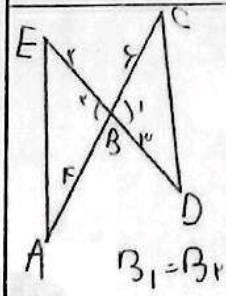
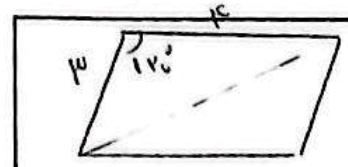


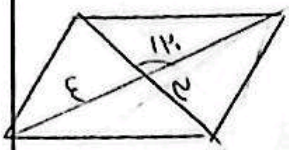
$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2}\sin B \cdot 2\cdot 4}{\frac{1}{2}\sin B \cdot 6\cdot 3} = \frac{4}{9}$$

$B_1 = B_2$

$$\sin^2 105^\circ = \frac{1+\sqrt{3}}{2} \qquad \sqrt{\frac{2+\sqrt{3}}{2}} \qquad \frac{\sqrt{2+\sqrt{3}}}{2}$$



$ab\sin 120^\circ = 4\times 3\times \frac{\sqrt{3}}{2} = 6\sqrt{3}$



$\frac{1}{2}ab\sin\alpha$

$\frac{1}{2}\times 4\times 3\times \frac{\sqrt{2}}{2} = 3\sqrt{2}$

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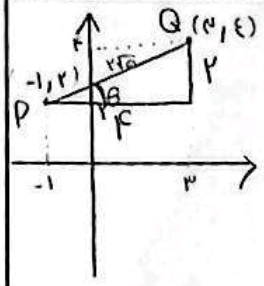

$4^2+3^2 = 25 \quad \sqrt{25} = 5$

$\cos\theta = \frac{4}{5}$

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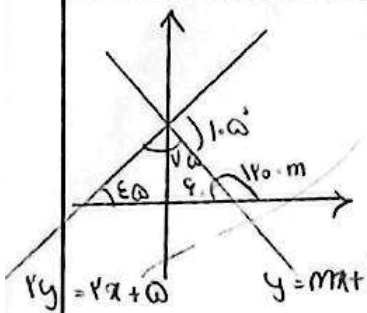

$\tan\frac{1}{2} = 45^\circ$

$y = x + \frac{5}{2}$

$\tan 120 = -\sqrt{3}$

$-\sqrt{3} \times \frac{5}{2} = -\frac{5\sqrt{3}}{2}$

$y = mx+b \Rightarrow y = mx + \frac{5}{2}$

$y = 2x+5$

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$f\left(\frac{5\pi}{4}\right)$

$f(x) = \underbrace{\cos(\pi+x)}_{-\cos x} + \underbrace{\sin\left(\frac{\pi}{2}-x\right)}_{+\cos x} - \underbrace{\tan\left(\frac{3\pi}{2}+x\right)}_{-(-\cot x)}$

$+\cot x$

$f(x) = \cot x$

$f\left(\frac{5\pi}{4}\right) = \cot\left(\frac{5\pi}{4}\right) = -\sqrt{3}$

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$\frac{\sin\left(\frac{17\pi}{2}+x\right) + \cos\left(\frac{13\pi}{2}-x\right)}{\cos(3\pi+x) - \tan(4\pi-x)} = \frac{\cos x + (-\sin x)}{-\cos x + \sin x} = -1$

$\frac{\pi}{2} = 90^\circ$

$\frac{11\pi}{2} = 990^\circ$

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